sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs Library

Cell Groups
SKY130_OSU_SC_18T_HS__ADDFx
SKY130_OSU_SC_18T_HS__ADDHx
SKY130_OSU_SC_18T_HS__AND2x
SKY130_OSU_SC_18T_HS__AOI21
SKY130_OSU_SC_18T_HS__AOI22
SKY130_OSU_SC_18T_HS__BUFx
SKY130_OSU_SC_18T_HS__DFFRx
SKY130_OSU_SC_18T_HS__DFFSRx
SKY130_OSU_SC_18T_HS__DFFSx
SKY130_OSU_SC_18T_HS__DFFx
SKY130_OSU_SC_18T_HS__INVx
SKY130_OSU_SC_18T_HS__MUX2
SKY130_OSU_SC_18T_HS__NAND2x
SKY130_OSU_SC_18T_HS__NOR2x
SKY130_OSU_SC_18T_HS__OAI21
SKY130_OSU_SC_18T_HS__OAI22
SKY130_OSU_SC_18T_HS__OR2x
SKY130_OSU_SC_18T_HS__TBUFIx
SKY130_OSU_SC_18T_HS__TNBUFIx
SKY130_OSU_SC_18T_HS__XNOR2
SKY130_OSU_SC_18T_HS__XOR2
SKY130_OSU_SC_18T_HS_x

SKY130_OSU_SC_18T_HS__ADDFx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT			OUTPUT		
A	B	CI	CO	CON	S
0	0	0	0	1	0
0	0	1	0	1	1
0	1	0	0	1	1
0	1	1	1	0	0
1	0	0	0	1	1
1	0	1	1	0	0
1	1	0	1	0	0
1	1	1	1	0	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__addf_1	46.88640
sky130_osu_sc_18T_hs__addf_l	46.88640

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)		
	A	B	CI	CO	CON	S
sky130_osu_sc_18T_hs__addf_1	0.02062	0.02062	0.01590	1.49897	0.67091	1.44267
sky130_osu_sc_18T_hs__addf_l	0.02060	0.02061	0.01586	0.89731	0.67243	0.88137

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addf_1	0.00000	0.00112	0.00132
sky130_osu_sc_18T_hs__addf_l	0.00000	0.00092	0.00131

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CO (RR)	0.18142	1.76696	21.22670
	B->CO (RR)	0.16408	1.68242	20.34940
	CI->CO (RR)	0.17425	1.80042	21.82670
	CON->CO (FR)	0.04527	0.96800	12.56960
sky130_osu_sc_18T_hs__addf_l	A->CO (RR)	0.19068	1.67091	16.89460
	B->CO (RR)	0.17648	1.61002	16.56850
	CI->CO (RR)	0.18342	1.70658	17.53650
	CON->CO (FR)	0.05780	1.09293	12.57560

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CO (FF)	0.35192	2.80106	32.86420
	B->CO (FF)	0.31943	2.68763	31.78470
	CI->CO (FF)	0.31120	2.72612	32.52150
	CON->CO (RF)	0.02562	0.56786	7.39854
sky130_osu_sc_18T_hs__addf_l	A->CO (FF)	0.35174	2.41472	23.74690
	B->CO (FF)	0.31872	2.32191	23.06400
	CI->CO (FF)	0.31080	2.33978	23.42390
	CON->CO (RF)	0.02918	0.60049	7.10919

Delay(ns) to CON rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CON (FR)	0.27692	1.40922	12.84390
	B->CON (FR)	0.24712	1.34202	12.51620
	CI->CON (FR)	0.23580	1.33481	12.55450
sky130_osu_sc_18T_hs__addf_l	A->CON (FR)	0.26142	1.39526	12.84580
	B->CON (FR)	0.23234	1.32868	12.51770
	CI->CON (FR)	0.22028	1.32084	12.55640

Delay(ns) to CON falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->CON (RF)	0.08963	0.57588	5.57854
	B->CON (RF)	0.08217	0.58107	5.73398
	CI->CON (RF)	0.08241	0.61374	6.15489
sky130_osu_sc_18T_hs__addf_l	A->CON (RF)	0.08613	0.57254	5.58083
	B->CON (RF)	0.07907	0.57814	5.73625
	CI->CON (RF)	0.07891	0.61051	6.15735

Delay(ns) to S rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->S (-R)	0.49150	2.79987	27.97010
	B->S (-R)	0.47796	2.76254	27.49800
	CI->S (-R)	0.44803	2.71924	27.60530
	CON->S (RR)	0.11240	0.84869	7.73746
sky130_osu_sc_18T_hs__addf_l	A->S (-R)	0.47354	2.53220	22.16240
	B->S (-R)	0.46153	2.50619	21.92870
	CI->S (-R)	0.43017	2.45217	21.81770
	CON->S (RR)	0.12019	0.95259	7.59816

Delay(ns) to S falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addf_1	A->S (-F)	0.32365	1.54309	14.31080
	B->S (-F)	0.34648	1.50058	13.88890
	CI->S (-F)	0.31598	1.57084	14.90160
	CON->S (FF)	0.15396	0.80135	6.69459
sky130_osu_sc_18T_hs__addf_l	A->S (-F)	0.30733	1.36304	11.10220
	B->S (-F)	0.30344	1.30325	11.05600
	CI->S (-F)	0.29939	1.39365	11.73180
	CON->S (FF)	0.14916	0.80434	6.31166

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00354	0.00338	0.00327
	B	0.00447	0.00448	0.00444
	CI	0.00481	0.00493	0.00494
sky130_osu_sc_18T_hs__addf_l	A	0.00272	0.00246	0.00239
	B	0.00366	0.00352	0.00338
	CI	0.00398	0.00399	0.00396

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01429	0.01429	0.01431
	B	0.01407	0.01425	0.01433
	CI	0.01228	0.01269	0.01276
sky130_osu_sc_18T_hs__addf_l	A	0.01346	0.01340	0.01339
	B	0.01325	0.01336	0.01336
	CI	0.01144	0.01179	0.01176

Internal switching power(pJ) to CON rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01427	0.01423	0.01418
	B	0.01406	0.01421	0.01414
	CI	0.01227	0.01261	0.01260
sky130_osu_sc_18T_hs__addf_l	A	0.01346	0.01337	0.01332
	B	0.01325	0.01335	0.01327
	CI	0.01144	0.01176	0.01173

Internal switching power(pJ) to CON falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.00349	0.00334	0.00310
	B	0.00442	0.00438	0.00419
	CI	0.00480	0.00490	0.00483
sky130_osu_sc_18T_hs__addf_l	A	0.00267	0.00244	0.00216
	B	0.00361	0.00348	0.00325
	CI	0.00397	0.00399	0.00387

Internal switching power(pJ) to S rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.01429	0.01429	0.01435
	B	0.01407	0.01425	0.01432
	CI	0.01228	0.01269	0.01272
sky130_osu_sc_18T_hs__addf_l	A	0.01347	0.01341	0.01342
	B	0.01326	0.01336	0.01338
	CI	0.01145	0.01179	0.01178

Internal switching power(pJ) to S falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addf_1	A	0.03016	0.03037	0.03038
	B	0.02699	0.02640	0.02687
	CI	0.02408	0.02415	0.02419
sky130_osu_sc_18T_hs__addf_l	A	0.02904	0.02905	0.02902
	B	0.02590	0.02514	0.02555
	CI	0.02302	0.02296	0.02297

SKY130_OSU_SC_18T_HS__ADDHx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT		
A	B	CO	CON	S
0	0	0	1	0
0	1	0	0	1
1	0	0	0	1
1	1	1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__addh_1	27.83880
sky130_osu_sc_18T_hs__addh_l	27.83880

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)		
	A	B	CO	CON	S
sky130_osu_sc_18T_hs__addh_1	0.01015	0.01104	1.45420	0.71448	1.47634
sky130_osu_sc_18T_hs__addh_l	0.01015	0.01105	0.88861	0.71695	0.88237

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__addh_1	0.00000	0.00107	0.00127
sky130_osu_sc_18T_hs__addh_l	0.00000	0.00090	0.00113

Delay Information

Delay(ns) to CO rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CO (RR)	0.13081	0.85028	7.41684
	B->CO (RR)	0.13455	0.84745	7.52568
sky130_osu_sc_18T_hs__addh_l	A->CO (RR)	0.13389	0.96150	7.48450
	B->CO (RR)	0.13759	0.96081	7.60112

Delay(ns) to CO falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CO (FF)	0.13395	0.77564	6.72827
	B->CO (FF)	0.14356	0.78939	6.78457
sky130_osu_sc_18T_hs__addh_l	A->CO (FF)	0.13380	0.82673	6.78412
	B->CO (FF)	0.14302	0.84076	6.84308

Delay(ns) to CON rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CON (RR)	B	0.18932	0.71320	3.94128
	A->CON (FR)	!B	0.15946	1.24638	12.52980
	B->CON (RR)	A	0.19318	0.70988	4.04841
	B->CON (FR)	!A	0.19154	1.31154	12.88710
sky130_osu_sc_18T_hs__addh_l	A->CON (RR)	B	0.16844	0.68022	3.83862
	A->CON (FR)	!B	0.14015	1.22812	12.53490
	B->CON (RR)	A	0.17234	0.67883	3.95381
	B->CON (FR)	!A	0.17214	1.29270	12.89220

Delay(ns) to CON falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->CON (FF)	B	0.17885	0.80325	5.94564
	A->CON (RF)	!B	0.05550	0.58068	6.16354
	B->CON (FF)	A	0.18419	0.83466	6.20410
	B->CON (RF)	!A	0.06238	0.56879	5.89684
sky130_osu_sc_18T_hs__addh_l	A->CON (FF)	B	0.15967	0.76894	5.75797
	A->CON (RF)	!B	0.05106	0.57609	6.16793
	B->CON (FF)	A	0.16468	0.80141	6.02134
	B->CON (RF)	!A	0.05811	0.56447	5.90125

Delay(ns) to S rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->S (RR)	!B	0.13614	1.70810	21.08460
	A->S (FR)	B	0.25987	1.89904	20.27260
	B->S (RR)	!A	0.14157	1.64329	20.14180
	B->S (FR)	A	0.26766	1.98254	21.24350
	CON->S (FR)	-	0.04982	0.98525	12.69780
sky130_osu_sc_18T_hs__addh_l	A->S (RR)	!B	0.13695	1.61675	17.02580
	A->S (FR)	B	0.24635	1.79457	16.23750
	B->S (RR)	!A	0.14298	1.56998	16.44420
	B->S (FR)	A	0.25366	1.86039	16.86330
	CON->S (FR)	-	0.05856	1.11002	12.69700

Delay(ns) to S falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__addh_1	A->S (FF)	!B	0.22231	2.48779	30.51720
	A->S (RF)	B	0.23879	1.51786	15.09220
	B->S (FF)	!A	0.25466	2.55744	30.91850
	B->S (RF)	A	0.24258	1.51476	15.20030
	CON->S (RF)	-	0.02393	0.55109	7.18141
sky130_osu_sc_18T_hs__addh_l	A->S (FF)	!B	0.21425	2.17946	22.68060
	A->S (RF)	B	0.22472	1.35524	10.85420
	B->S (FF)	!A	0.24615	2.24535	23.05610
	B->S (RF)	A	0.22858	1.35409	10.97460
	CON->S (RF)	-	0.02883	0.62779	7.44073

Power Information

Internal switching power(pJ) to CO rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00613	0.00581	0.00528
	B	0.00000	0.00000	0.00000
	B	0.00563	0.00531	0.00469
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00495	0.00453	0.00454
	B	0.00000	0.00000	0.00000
	B	0.00446	0.00404	0.00408

Internal switching power(pJ) to CO falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00988	0.00948	0.00895
	B	0.00000	0.00000	0.00000
	B	0.01027	0.01026	0.00975
sky130_osu_sc_18T_hs__addh_1	A	0.00000	0.00000	0.00000
	A	0.00870	0.00826	0.00800
	B	0.00000	0.00000	0.00000
	B	0.00909	0.00900	0.00888

Internal switching power(pJ) to CON rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00612	0.00596	0.00548
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00858	0.00856	0.00849
	B	A	0.00000	0.00000	0.00000
	B	A	0.00563	0.00549	0.00498
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00941	0.00934	0.00912
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00495	0.00452	0.00438
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00780	0.00773	0.00768
	B	A	0.00000	0.00000	0.00000
	B	A	0.00445	0.00403	0.00383
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00863	0.00852	0.00830

Internal switching power(pJ) to CON falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00988	0.00951	0.00930
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00129	0.00125	0.00085
	B	A	0.00000	0.00000	0.00000
	B	A	0.01027	0.01025	0.01008
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00223	0.00209	0.00190
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00869	0.00826	0.00804
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00028	0.00023	-0.00011
	B	A	0.00000	0.00000	0.00000
	B	A	0.00908	0.00899	0.00891
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00122	0.00107	0.00086

Internal switching power(pJ) to S rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00990	0.00949	0.00923
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00130	0.00133	0.00112
	B	A	0.00000	0.00000	0.00000
	B	A	0.01027	0.01027	0.01010
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00225	0.00213	0.00192
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00871	0.00826	0.00677
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00029	0.00026	0.00004
	B	A	0.00000	0.00000	0.00000
	B	A	0.00909	0.00901	0.00873
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00124	0.00109	0.00074

Internal switching power(pJ) to S falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__addh_1	A	B	0.00000	0.00000	0.00000
	A	B	0.00613	0.00580	0.00523
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00858	0.00860	0.00848
	B	A	0.00000	0.00000	0.00000
	B	A	0.00563	0.00531	0.00468
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00941	0.00941	0.00930
sky130_osu_sc_18T_hs__addh_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00495	0.00452	0.00462
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00781	0.00775	0.00770
	B	A	0.00000	0.00000	0.00000
	B	A	0.00445	0.00403	0.00375
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00863	0.00854	0.00844

SKY130_OSU_SC_18T_HS__AND2x

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__and2_1	12.45420
sky130_osu_sc_18T_hs__and2_2	15.38460
sky130_osu_sc_18T_hs__and2_4	21.24540
sky130_osu_sc_18T_hs__and2_6	27.10620
sky130_osu_sc_18T_hs__and2_8	32.96700
sky130_osu_sc_18T_hs__and2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__and2_1	0.00547	0.00556	1.49166
sky130_osu_sc_18T_hs__and2_2	0.00547	0.00556	2.89819
sky130_osu_sc_18T_hs__and2_4	0.00547	0.00556	5.65202
sky130_osu_sc_18T_hs__and2_6	0.00550	0.00556	8.20684
sky130_osu_sc_18T_hs__and2_8	0.00548	0.00557	10.61504
sky130_osu_sc_18T_hs__and2_l	0.00417	0.00426	0.89952

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__and2_1	0.00000	0.00051	0.00077
sky130_osu_sc_18T_hs__and2_2	0.00000	0.00079	0.00083
sky130_osu_sc_18T_hs__and2_4	0.00000	0.00136	0.00152
sky130_osu_sc_18T_hs__and2_6	0.00000	0.00192	0.00224
sky130_osu_sc_18T_hs__and2_8	0.00000	0.00249	0.00296
sky130_osu_sc_18T_hs__and2_l	0.00000	0.00026	0.00038

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__and2_1	A->Y (RR)	0.10014	0.78075	7.16622
	B->Y (RR)	0.10490	0.78626	7.31400
sky130_osu_sc_18T_hs__and2_2	A->Y (RR)	0.11354	0.71053	7.34592
	B->Y (RR)	0.11826	0.70653	7.45796
sky130_osu_sc_18T_hs__and2_4	A->Y (RR)	0.15638	0.72253	7.88985
	B->Y (RR)	0.16108	0.70995	7.95649
sky130_osu_sc_18T_hs__and2_6	A->Y (RR)	0.19723	0.75616	8.10756
	B->Y (RR)	0.20167	0.73851	8.16092
sky130_osu_sc_18T_hs__and2_8	A->Y (RR)	0.23829	0.80055	8.39504
	B->Y (RR)	0.24296	0.78109	8.40373
sky130_osu_sc_18T_hs__and2_1	A->Y (RR)	0.12197	0.94378	7.62251
	B->Y (RR)	0.12724	0.94732	7.75975

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__and2_1	**A->Y (FF)**	0.09973	0.70015	6.28035
	B->Y (FF)	0.10766	0.71732	6.38048
sky130_osu_sc_18T_hs__and2_2	**A->Y (FF)**	0.12085	0.69915	6.52704
	B->Y (FF)	0.12948	0.71352	6.60758
sky130_osu_sc_18T_hs__and2_4	**A->Y (FF)**	0.17389	0.75006	7.01313
	B->Y (FF)	0.18256	0.76184	7.06858
sky130_osu_sc_18T_hs__and2_6	**A->Y (FF)**	0.22932	0.80611	7.30836
	B->Y (FF)	0.23803	0.81608	7.36694
sky130_osu_sc_18T_hs__and2_8	**A->Y (FF)**	0.28176	0.86080	7.50428
	B->Y (FF)	0.29027	0.87063	7.56148
sky130_osu_sc_18T_hs__and2_l	**A->Y (FF)**	0.12082	0.76725	6.29097
	B->Y (FF)	0.13146	0.78610	6.39301

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.00484	0.00416	0.00434
	B	0.00000	0.00000	0.00000
	B	0.00491	0.00422	0.00415
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.00965	0.00984	0.00945
	B	0.00000	0.00000	0.00000
	B	0.00973	0.00939	0.00930
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.01997	0.02030	0.02104
	B	0.00000	0.00000	0.00000
	B	0.02006	0.02051	0.02089
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03020	0.03125	0.03193
	B	0.00000	0.00000	0.00000
	B	0.03020	0.03134	0.03198
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.04030	0.04193	0.05240
	B	0.00000	0.00000	0.00000
	B	0.04038	0.04207	0.04278
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00354	0.00304	0.00307
	B	0.00000	0.00000	0.00000
	B	0.00363	0.00311	0.00306

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	A	0.00000	0.00000	0.00000
	A	0.01192	0.01171	0.01225
	B	0.00000	0.00000	0.00000
	B	0.01337	0.01311	0.01360
sky130_osu_sc_18T_hs__and2_2	A	0.00000	0.00000	0.00000
	A	0.01501	0.01545	0.01606
	B	0.00000	0.00000	0.00000
	B	0.01647	0.01684	0.01735
sky130_osu_sc_18T_hs__and2_4	A	0.00000	0.00000	0.00000
	A	0.02257	0.02430	0.02521
	B	0.00000	0.00000	0.00000
	B	0.02403	0.02557	0.02628
sky130_osu_sc_18T_hs__and2_6	A	0.00000	0.00000	0.00000
	A	0.03024	0.03318	0.03460
	B	0.00000	0.00000	0.00000
	B	0.03169	0.03425	0.03547
sky130_osu_sc_18T_hs__and2_8	A	0.00000	0.00000	0.00000
	A	0.03757	0.04180	0.04387
	B	0.00000	0.00000	0.00000
	B	0.03904	0.04279	0.04444
sky130_osu_sc_18T_hs__and2_l	A	0.00000	0.00000	0.00000
	A	0.00914	0.00890	0.00901
	B	0.00000	0.00000	0.00000
	B	0.01017	0.00993	0.01000

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00451	-0.00457	-0.00456
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00452	-0.00457	-0.00456
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00452	-0.00457	-0.00456
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00454	-0.00459	-0.00458
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00452	-0.00457	-0.00456
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	-0.00330	-0.00334	-0.00333

Passive power(pJ) for A falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00455	0.00458	0.00457
sky130_osu_sc_18T_hs__and2_2	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00455	0.00458	0.00457
sky130_osu_sc_18T_hs__and2_4	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00455	0.00458	0.00457
sky130_osu_sc_18T_hs__and2_6	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00457	0.00460	0.00459
sky130_osu_sc_18T_hs__and2_8	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00455	0.00458	0.00457
sky130_osu_sc_18T_hs__and2_l	(!B * !Y)	0.00000	0.00000	0.00000
	(!B * !Y)	0.00332	0.00334	0.00333

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00429	-0.00431	-0.00430
sky130_osu_sc_18T_hs__and2_2	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00429	-0.00432	-0.00430
sky130_osu_sc_18T_hs__and2_4	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00429	-0.00432	-0.00430
sky130_osu_sc_18T_hs__and2_6	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00429	-0.00431	-0.00430
sky130_osu_sc_18T_hs__and2_8	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00429	-0.00433	-0.00430
sky130_osu_sc_18T_hs__and2_l	(!A * !Y)	0.00000	0.00000	0.00000
	(!A * !Y)	-0.00314	-0.00314	-0.00315

Passive power(pJ) for B falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__and2_1	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00430	0.00436	0.00431
sky130_osu_sc_18T_hs__and2_2	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00430	0.00436	0.00432
sky130_osu_sc_18T_hs__and2_4	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00430	0.00436	0.00432
sky130_osu_sc_18T_hs__and2_6	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00430	0.00436	0.00432
sky130_osu_sc_18T_hs__and2_8	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00430	0.00436	0.00432
sky130_osu_sc_18T_hs__and2_l	**(!A * !Y)**	0.00000	0.00000	0.00000
	(!A * !Y)	0.00314	0.00319	0.00315

SKY130_OSU_SC_18T_HS__AOI21

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT			OUTPUT
A0	A1	B0	Y
0	x	0	1
x	x	1	0
1	0	0	1
1	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__aoi21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_hs__aoi21_l	0.00513	0.00535	0.00519	0.68337

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi21_l	0.00000	0.00024	0.00036

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi21_l	A0->Y (FR)	0.14389	1.28815	12.88390
	A1->Y (FR)	0.12254	1.22975	12.54950
	B0->Y (FR)	0.10813	1.21965	12.58640

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi21_l	A0->Y (RF)	0.04657	0.51774	5.40470
	A1->Y (RF)	0.04199	0.54103	5.74586
	B0->Y (RF)	0.03386	0.56129	6.26315

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.01001	0.00988	0.00951
	A1	0.00000	0.00000	0.00000
	A1	0.00848	0.00832	0.00829
	B0	0.00810	0.00790	0.00787

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	A0	0.00000	0.00000	0.00000
	A0	0.00159	0.00129	0.00111
	A1	0.00000	0.00000	0.00000
	A1	0.00162	0.00126	0.00112
	B0	-0.00108	-0.00110	-0.00121

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00386	-0.00400	-0.00398
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	-0.00406	-0.00407	-0.00407
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00406	-0.00408	-0.00407

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00395	0.00400	0.00398
	(!A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !Y)	0.00406	0.00411	0.00408
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00407	0.00410	0.00408

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00383	-0.00396	-0.00394
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	-0.00401	-0.00402	-0.00402
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00432	-0.00433	-0.00436

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00391	0.00397	0.00394
	(!A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !Y)	0.00401	0.00406	0.00403
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00434	0.00439	0.00437

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	-0.00227	-0.00229	-0.00228

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi21_l	(A0 * A1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !Y)	0.00246	0.00247	0.00233

SKY130_OSU_SC_18T_HS__AOI22

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	x	0	x	1
0	x	1	0	1
x	x	1	1	0
1	0	0	x	1
1	0	1	0	1
1	1	x	x	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__aoi22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_hs__aoi22_l	0.00514	0.00535	0.00556	0.00532	0.66356

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__aoi22_l	0.00000	0.00032	0.00072

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi22_l	A0->Y (FR)	0.18404	1.33556	12.85810
	A1->Y (FR)	0.16333	1.29485	12.69530
	B0->Y (FR)	0.11457	1.21123	12.38150
	B1->Y (FR)	0.13548	1.25431	12.59070

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__aoi22_l	A0->Y (RF)	0.05948	0.52906	5.34199
	A1->Y (RF)	0.05491	0.54709	5.67856
	B0->Y (RF)	0.03499	0.52373	5.64719
	B1->Y (RF)	0.03954	0.50117	5.31420

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.01228	0.01213	0.01131
	A1	0.01079	0.01055	0.01050
	B0	0.00870	0.00837	0.00839
	B1	0.01015	0.00991	0.00990

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	A0	0.00365	0.00335	0.00313
	A1	0.00368	0.00331	0.00314
	B0	-0.00071	-0.00072	-0.00084
	B1	-0.00066	-0.00068	-0.00080

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	-0.00387	-0.00400	-0.00398
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	-0.00405	-0.00407	-0.00407
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	-0.00406	-0.00408	-0.00407
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00406	-0.00408	-0.00407

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * B1 * !Y)	0.00395	0.00400	0.00398
	(!A1 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * B1 * !Y)	0.00406	0.00411	0.00408
	(!A1 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * B0 * !B1 * Y)	0.00407	0.00410	0.00408
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00407	0.00410	0.00408

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	-0.00383	-0.00396	-0.00393
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	-0.00402	-0.00403	-0.00402
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	-0.00432	-0.00433	-0.00436
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00432	-0.00433	-0.00436

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * B1 * !Y)	0.00391	0.00396	0.00393
	(!A0 * B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * B1 * !Y)	0.00402	0.00406	0.00404
	(!A0 * B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * B0 * !B1 * Y)	0.00434	0.00438	0.00437
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00434	0.00438	0.00437

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	-0.00228	-0.00230	-0.00229
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	-0.00228	-0.00230	-0.00229
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	-0.00443	-0.00446	-0.00447
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	-0.00443	-0.00447	-0.00447

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B1 * !Y)	0.00253	0.00255	0.00235
	(A0 * A1 * !B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B1 * !Y)	0.00228	0.00230	0.00229
	(!A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B1 * Y)	0.00445	0.00453	0.00447
	(!A0 * A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B1 * Y)	0.00445	0.00453	0.00447

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	-0.00230	-0.00231	-0.00231
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	-0.00229	-0.00230	-0.00230
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00412	-0.00414	-0.00413
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	-0.00412	-0.00416	-0.00413

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__aoi22_l	(A0 * A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * B0 * !Y)	0.00255	0.00256	0.00237
	(A0 * A1 * !B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * A1 * !B0 * !Y)	0.00229	0.00231	0.00230
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00413	0.00416	0.00414
	(!A0 * A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * A1 * !B0 * Y)	0.00413	0.00416	0.00414

SKY130_OSU_SC_18T_HS__BUFx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	0
1	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__buf_1	9.52380
sky130_osu_sc_18T_hs__buf_2	12.45420
sky130_osu_sc_18T_hs__buf_4	18.31500
sky130_osu_sc_18T_hs__buf_6	24.17580
sky130_osu_sc_18T_hs__buf_8	30.03660
sky130_osu_sc_18T_hs__buf_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_hs__buf_1	0.00557	1.47565
sky130_osu_sc_18T_hs__buf_2	0.00557	2.93910
sky130_osu_sc_18T_hs__buf_4	0.00557	5.68400
sky130_osu_sc_18T_hs__buf_6	0.00098	1.80000
sky130_osu_sc_18T_hs__buf_8	0.00558	10.80443
sky130_osu_sc_18T_hs__buf_l	0.00431	0.89308

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__buf_1	0.00000	0.00041	0.00041
sky130_osu_sc_18T_hs__buf_2	0.00000	0.00062	0.00077
sky130_osu_sc_18T_hs__buf_4	0.00000	0.00104	0.00149
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
sky130_osu_sc_18T_hs__buf_8	0.00000	0.00186	0.00292
sky130_osu_sc_18T_hs__buf_l	0.00000	0.00022	0.00022

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__buf_1	**A->Y (RR)**	0.07940	0.74630	7.05793
sky130_osu_sc_18T_hs__buf_2	**A->Y (RR)**	0.08599	0.66549	7.34737
sky130_osu_sc_18T_hs__buf_4	**A->Y (RR)**	0.11564	0.65728	7.75636
sky130_osu_sc_18T_hs__buf_8	**A->Y (RR)**	0.17249	0.70820	8.19398
sky130_osu_sc_18T_hs__buf_l	**A->Y (RR)**	0.09757	0.90000	7.46976

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__buf_1	**A->Y (FF)**	0.09496	0.68918	6.19604
sky130_osu_sc_18T_hs__buf_2	**A->Y (FF)**	0.11666	0.69456	6.54657
sky130_osu_sc_18T_hs__buf_4	**A->Y (FF)**	0.17011	0.74523	7.00421
sky130_osu_sc_18T_hs__buf_8	**A->Y (FF)**	0.27800	0.85797	7.53492
sky130_osu_sc_18T_hs__buf_l	**A->Y (FF)**	0.11679	0.75556	6.21967

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.00449	0.00409	0.00386
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.00935	0.00885	0.00897
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.01975	0.01988	0.02076
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.04008	0.04161	0.04244
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00341	0.00280	0.00273

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__buf_1	A	0.00000	0.00000	0.00000
	A	0.01156	0.01129	0.01184
sky130_osu_sc_18T_hs__buf_2	A	0.00000	0.00000	0.00000
	A	0.01460	0.01492	0.01549
sky130_osu_sc_18T_hs__buf_4	A	0.00000	0.00000	0.00000
	A	0.02219	0.02371	0.02451
sky130_osu_sc_18T_hs__buf_8	A	0.00000	0.00000	0.00000
	A	0.03731	0.04099	0.04280
sky130_osu_sc_18T_hs__buf_l	A	0.00000	0.00000	0.00000
	A	0.00895	0.00866	0.00877

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
	-0.00061	-0.00061	-0.00061

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__buf_6	0.00000	0.00000	0.00000
	0.00061	0.00061	0.00061

SKY130_OSU_SC_18T_HS__DFFRx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT			OUTPUT	
D	RN	CK	Q	QN
0	1	R	0	1
1	1	R	1	0
x	0	x	0	1
x	1	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dffr_1	63.73620
sky130_osu_sc_18T_hs__dffr_l	63.73620

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	RN	CK	Q	QN
sky130_osu_sc_18T_hs__dffr_1	0.00529	0.00530	0.01575	1.45184	1.44693
sky130_osu_sc_18T_hs__dffr_l	0.00529	0.00530	0.01575	0.89996	0.90074

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffr_1	0.00000	0.00163	0.00221
sky130_osu_sc_18T_hs__dffr_l	0.00000	0.00143	0.00201

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->Q (RR)	0.53015	1.71221	13.54540
	QN->Q (FR)	0.05157	1.05171	13.52950
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RR)	0.52934	1.83714	12.87220
	QN->Q (FR)	0.06189	1.15120	13.24230

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->Q (RF)	0.44567	1.70877	15.15570
	QN->Q (RF)	0.02983	0.65854	8.55169
	RN->Q (FF)	0.32148	1.80760	18.02080
sky130_osu_sc_18T_hs__dffr_l	CK->Q (RF)	0.46953	1.93923	15.04160
	QN->Q (RF)	0.03220	0.66875	8.00147
	RN->Q (FF)	0.34583	2.04156	17.89320

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	CK->QN (RR)	0.39922	1.09196	7.57346
	RN->QN (FR)	0.27437	1.19072	10.43700
sky130_osu_sc_18T_hs__dffr_l	CK->QN (RR)	0.40996	1.21027	7.61855
	RN->QN (FR)	0.28578	1.30905	10.46920

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffr_1	**CK->QN (RF)**	0.44975	0.90359	3.75639
sky130_osu_sc_18T_hs__dffr_l	**CK->QN (RF)**	0.43661	0.89697	3.41863

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.07751	-0.10260	-0.50171
	setup	CK (R)	0.41785	0.43617	1.85177
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.07832	-0.10315	-0.50270
	setup	CK (R)	0.41753	0.43585	1.88636

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.21732	-0.57868	-6.90245
	setup	CK (R)	0.25145	0.59288	6.98485
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.21691	-0.57793	-6.90275
	setup	CK (R)	0.24833	0.59288	6.98451

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.07751	-0.10260	-0.50171
	setup	CK (R)	0.41785	0.43617	1.85177
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.07832	-0.10315	-0.50270
	setup	CK (R)	0.41753	0.43585	1.88636

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	hold	CK (R)	-0.21732	-0.57868	-6.90245
	setup	CK (R)	0.25145	0.59288	6.98485
sky130_osu_sc_18T_hs__dffr_l	hold	CK (R)	-0.21691	-0.57793	-6.90275
	setup	CK (R)	0.24833	0.59288	6.98451

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	recovery	CK (R)	0.37332	0.38686	1.60561
	removal	CK (R)	-0.08315	-0.09820	-0.13158
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.37409	0.38793	1.60658
	removal	CK (R)	-0.08315	-0.09820	-0.13158

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	recovery	CK (R)	0.37332	0.38686	1.60561
	removal	CK (R)	-0.08315	-0.09820	-0.13158
sky130_osu_sc_18T_hs__dffr_l	recovery	CK (R)	0.37409	0.38793	1.60658
	removal	CK (R)	-0.08315	-0.09820	-0.13158

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	min_pulse_width	RN ()	0.19897	0.53339	13.33370
	min_pulse_width	RN ()	0.19697	0.53339	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	RN ()	0.20021	0.53120	13.33370
	min_pulse_width	RN ()	0.19944	0.52901	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	min_pulse_width	CK ()	0.23928	0.51148	13.33370
	min_pulse_width	CK ()	0.23161	0.51148	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.22011	0.51148	13.33370
	min_pulse_width	CK ()	0.22394	0.51148	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffr_1	min_pulse_width	CK ()	0.53053	0.64517	13.33370
	min_pulse_width	CK ()	0.20094	0.51148	13.33370
sky130_osu_sc_18T_hs__dffr_l	min_pulse_width	CK ()	0.53117	0.64297	13.33370
	min_pulse_width	CK ()	0.20094	0.51148	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01112	0.00820	-0.00229
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00982	0.00778	-0.00537

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01290	0.01170	0.00229
	RN	-0.00155	-0.07203	-0.92917
	RN	0.02948	0.02846	0.01886
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01154	0.01067	0.00695
	RN	-0.00155	-0.05406	-0.57598
	RN	0.02811	0.02742	0.02350

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01290	0.01171	0.00242
	RN	-0.00155	-0.07189	-0.92604
	RN	0.02948	0.02846	0.01890
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.01155	0.01068	0.00699
	RN	-0.00155	-0.05409	-0.57647
	RN	0.02812	0.02742	0.02347

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.01109	0.00818	-0.00242
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00977	0.00775	-0.00536

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00375	-0.00397	-0.00396
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01310	0.01243	0.01207
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00600	0.00541	0.00511
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	-0.00375	-0.00397	-0.00396
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.01310	0.01243	0.01207
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.00600	0.00541	0.00511

Passive power(pJ) for D falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	CK	0.00000	0.00000	0.00000
	CK	0.00394	0.00397	0.00396
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02283	0.02249	0.02217
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01036	0.01011	0.01005
sky130_osu_sc_18T_hs__dffr_l	CK	0.00000	0.00000	0.00000
	CK	0.00394	0.00397	0.00396
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * Q * !QN) + (!CK * RN * !Q * QN)	0.02283	0.02249	0.02217
	(!CK * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !Q * QN)	0.01036	0.01011	0.01005

Passive power(pJ) for RN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00466	0.00392	0.00388
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01220	0.01118	0.01091
sky130_osu_sc_18T_hs__dffr_l	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00466	0.00392	0.00388
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.01220	0.01118	0.01091

Passive power(pJ) for RN falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01036	0.00993	0.01043
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02256	0.02190	0.02185
sky130_osu_sc_18T_hs__dffr_1	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !Q * QN) + (!CK * !D * !Q * QN)	0.01036	0.00993	0.01043
	(!CK * D * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !Q * QN)	0.02256	0.02190	0.02185

Passive power(pJ) for CK rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00082	-0.00165	-0.00181
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00619	0.00451	0.00390
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00130	-0.00223	-0.00228
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00082	-0.00165	-0.00181
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.00619	0.00451	0.00391
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00130	-0.00223	-0.00228

Passive power(pJ) for CK falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01722	0.01677	0.01707
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03517	0.03400	0.03314
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02731	0.02648	0.02597
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03536	0.03427	0.03488
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01876	0.01836	0.01868
sky130_osu_sc_18T_hs__dffr_l	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01722	0.01677	0.01707
	(D * RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * RN * !Q * QN)	0.03517	0.03400	0.03318
	(D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !Q * QN)	0.02731	0.02648	0.02597
	(!D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * Q * !QN)	0.03536	0.03427	0.03488
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01876	0.01836	0.01867

SKY130_OSU_SC_18T_HS__DFFSRx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT				OUTPUT	
D	**RN**	**SN**	**CK**	**Q**	**QN**
0	**1**	**1**	**R**	**0**	**1**
1	**1**	**1**	**R**	**1**	**0**
x	**0**	**x**	**x**	**0**	**1**
x	**1**	**0**	**x**	**1**	**0**
x	**1**	**1**	**x**	**IQ**	**IQN**

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dffsr_1	69.59700
sky130_osu_sc_18T_hs__dffsr_l	69.59700

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)	
	D	**RN**	**SN**	**CK**	**Q**	**QN**
sky130_osu_sc_18T_hs__dffsr_1	0.00524	0.00531	0.01127	0.01596	1.49288	1.49908
sky130_osu_sc_18T_hs__dffsr_l	0.00524	0.00531	0.01126	0.01596	0.89752	0.89397

Leakage Information

Cell Name	Leakage(nW)		
	Min.	**Avg**	**Max.**
sky130_osu_sc_18T_hs__dffsr_1	0.00000	0.00181	0.00229
sky130_osu_sc_18T_hs__dffsr_l	0.00000	0.00162	0.00209

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->Q (RR)	0.47526	1.62677	13.38210
	QN->Q (FR)	0.04919	1.02726	13.33890
	RN->Q (RR)	0.38176	1.54277	13.42130
	SN->Q (FR)	0.37453	1.75227	17.11390
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RR)	0.49016	1.79370	12.87600
	QN->Q (FR)	0.06179	1.14940	13.19640
	RN->Q (RR)	0.39797	1.71117	12.92200
	SN->Q (FR)	0.38936	1.92064	16.57800

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->Q (RF)	0.47762	1.72492	15.08160
	QN->Q (RF)	0.02718	0.61872	8.11341
	RN->Q (FF)	0.33700	1.80849	18.01770
sky130_osu_sc_18T_hs__dffsr_l	CK->Q (RF)	0.50836	1.98262	15.03470
	QN->Q (RF)	0.03212	0.66736	7.98398
	RN->Q (FF)	0.36735	2.06459	17.95220

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->QN (RR)	0.43260	1.12672	7.66465
	RN->QN (FR)	0.29240	1.20952	10.59600
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RR)	0.44812	1.24958	7.60384
	RN->QN (FR)	0.30737	1.33175	10.52420

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffsr_1	CK->QN (RF)	0.40463	0.84325	3.72943
	RN->QN (RF)	0.31169	0.76075	3.76739
	SN->QN (FF)	0.30446	0.97049	7.45104
sky130_osu_sc_18T_hs__dffsr_l	CK->QN (RF)	0.40368	0.85959	3.44766
	RN->QN (RF)	0.31104	0.77762	3.48605
	SN->QN (FF)	0.30317	0.98738	7.14501

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.07562	-0.10622	-0.56546
	setup	CK (R)	0.35721	0.37150	1.78785
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.07583	-0.10661	-0.56627
	setup	CK (R)	0.35403	0.36906	1.77848

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.23115	-0.59401	-7.01446
	setup	CK (R)	0.27305	0.60817	7.07082
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.23398	-0.59252	-7.01189
	setup	CK (R)	0.27081	0.60576	7.06923

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.07562	-0.10622	-0.56546
	setup	CK (R)	0.35721	0.37150	1.78785
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.07583	-0.10661	-0.56627
	setup	CK (R)	0.35403	0.36906	1.77848

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	hold	CK (R)	-0.23115	-0.59401	-7.01446
	setup	CK (R)	0.27305	0.60817	7.07082
sky130_osu_sc_18T_hs__dffsr_l	hold	CK (R)	-0.23398	-0.59252	-7.01189
	setup	CK (R)	0.27081	0.60576	7.06923

Constraints(ns) for RN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.28575	0.30112	1.49640
	removal	CK (R)	-0.03111	-0.03853	-0.07578
	hold	SN (R)	-0.29394	-0.52479	-4.00782
	setup	SN (R)	0.31577	0.56617	6.41664
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.28463	0.29871	1.49337
	removal	CK (R)	-0.03111	-0.03853	-0.07578
	hold	SN (R)	-0.28580	-0.51852	-3.95638
	setup	SN (R)	0.31764	0.56251	6.31531

Constraints(ns) for RN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.28575	0.30112	1.49640
	removal	CK (R)	-0.03111	-0.03853	-0.07578
	hold	SN (R)	-0.29394	-0.52479	-4.00782
	hold	SN (R)	-0.29602	-0.52604	-4.01430
	setup	SN (R)	0.31577	0.56505	6.30420
	setup	SN (R)	0.31146	0.56617	6.41664
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.28463	0.29871	1.49337
	removal	CK (R)	-0.03111	-0.03853	-0.07578
	hold	SN (R)	-0.29579	-0.51852	-3.97872
	hold	SN (R)	-0.28580	-0.51852	-3.95638
	setup	SN (R)	0.31764	0.55736	6.23378
	setup	SN (R)	0.29546	0.56251	6.31531

Constraints(ns) for RN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	min_pulse_width	RN ()	0.22832	0.55750	13.33370
	min_pulse_width	RN ()	0.23252	0.55750	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	RN ()	0.22871	0.55312	13.33370
	min_pulse_width	RN ()	0.22663	0.55312	13.33370

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.04610	0.08156	3.33834
	removal	CK (R)	-0.01221	-0.05480	-0.48046
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.04430	0.08070	3.10596
	removal	CK (R)	-0.01410	-0.05691	-0.48128

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	recovery	CK (R)	0.04610	0.08156	3.33834
	removal	CK (R)	-0.01221	-0.05480	-0.48046
sky130_osu_sc_18T_hs__dffsr_l	recovery	CK (R)	0.04430	0.08070	3.10596
	removal	CK (R)	-0.01410	-0.05691	-0.48128

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	min_pulse_width	SN ()	0.30513	0.64297	13.33370
	min_pulse_width	SN ()	0.30369	0.64517	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	SN ()	0.30591	0.63421	13.33370
	min_pulse_width	SN ()	0.28864	0.63859	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	min_pulse_width	CK ()	0.20477	0.51148	13.33370
	min_pulse_width	CK ()	0.23928	0.51148	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.19711	0.51148	13.33370
	min_pulse_width	CK ()	0.23544	0.51148	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	min_pulse_width	CK ()	0.47071	0.58818	13.33370
	min_pulse_width	CK ()	0.22666	0.51805	13.33370
sky130_osu_sc_18T_hs__dffsr_l	min_pulse_width	CK ()	0.46897	0.58599	13.33370
	min_pulse_width	CK ()	0.22278	0.51805	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01377	0.01159	-0.00581
	RN	0.02611	0.02429	0.00387
	SN	-0.00155	-0.07325	-0.95544
	SN	0.02868	0.02695	0.00659
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01255	0.01053	-0.00264
	RN	0.02489	0.02323	0.01005
	SN	-0.00155	-0.05398	-0.57442
	SN	0.02745	0.02590	0.01224

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01473	0.01375	0.00581
	RN	-0.00155	-0.07325	-0.95544
	RN	0.03046	0.02951	0.02133
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01349	0.01272	0.00911
	RN	-0.00155	-0.05398	-0.57442
	RN	0.02921	0.02846	0.02471

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01474	0.01376	0.00589
	RN	-0.00155	-0.07343	-0.95941
	RN	0.03046	0.02951	0.02138
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01351	0.01275	0.00919
	RN	-0.00155	-0.05385	-0.57214
	RN	0.02921	0.02846	0.02471

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.01371	0.01157	-0.00589
	RN	0.02606	0.02424	0.00369
	SN	-0.00155	-0.07343	-0.95935
	SN	0.02864	0.02691	0.00615
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.01250	0.01050	-0.00236
	RN	0.02483	0.02320	0.00985
	SN	-0.00155	-0.05385	-0.57210
	SN	0.02741	0.02586	0.01260

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00384	-0.00397	-0.00396
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.01691	0.01630	0.01594
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00682	0.00624	0.00597
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00678	0.00621	0.00592
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00686	0.00629	0.00600
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	-0.00384	-0.00397	-0.00396
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.01691	0.01630	0.01594
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.00682	0.00624	0.00597
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.00678	0.00621	0.00592
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.00686	0.00629	0.00600

Passive power(pJ) for D falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	CK	0.00000	0.00000	0.00000
	CK	0.00394	0.00397	0.00396
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.02579	0.02544	0.02498
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01105	0.01082	0.01075
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01110	0.01087	0.01078
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01101	0.01077	0.01071
sky130_osu_sc_18T_hs__dffsr_l	CK	0.00000	0.00000	0.00000
	CK	0.00394	0.00397	0.00396
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * RN * SN * Q * !QN) + (!CK * RN * SN * !Q * QN)	0.02578	0.02543	0.02497
	(!CK * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * RN * !SN * Q * !QN)	0.01104	0.01081	0.01074
	(!CK * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * SN * !Q * QN)	0.01109	0.01086	0.01077
	(!CK * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * !RN * !SN * !Q * QN)	0.01100	0.01076	0.01070

Passive power(pJ) for RN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00437	0.00364	0.00350
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01486	0.01379	0.01342
sky130_osu_sc_18T_hs__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00437	0.00364	0.00350
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.01487	0.01379	0.01342

Passive power(pJ) for RN falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.01128	0.01082	0.01136
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02391	0.02305	0.02300
sky130_osu_sc_18T_hs__dffsr_l	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * SN * !Q * QN) + (!CK * !D * SN * !Q * QN)	0.01126	0.01081	0.01135
	(!CK * D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * SN * !Q * QN)	0.02390	0.02304	0.02299

Passive power(pJ) for SN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00897	-0.00908	-0.00905
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00916	-0.00928	-0.00927
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00886	-0.00895	-0.00894
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00538	0.00471	0.00433
sky130_osu_sc_18T_hs__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	-0.00897	-0.00909	-0.00905
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	-0.00915	-0.00927	-0.00925
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	-0.00886	-0.00894	-0.00893
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.00541	0.00473	0.00434

Passive power(pJ) for SN falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00901	0.00911	0.00907
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00921	0.00928	0.00927
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00890	0.00895	0.00894
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01787	0.01749	0.01747
sky130_osu_sc_18T_hs__dffsr_l	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(CK * RN * Q * !QN) + (!CK * D * RN * Q * !QN)	0.00901	0.00911	0.00907
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(CK * !RN * !Q * QN) + (!CK * !D * !RN * !Q * QN)	0.00920	0.00927	0.00925
	(!CK * D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * D * !RN * !Q * QN)	0.00890	0.00894	0.00894
	(!CK * !D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * RN * Q * !QN)	0.01786	0.01748	0.01746

Passive power(pJ) for CK rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00083	-0.00165	-0.00181
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00711	0.00551	0.00497
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00702	0.00542	0.00489
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00110	-0.00203	-0.00208
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00545	0.00379	0.00365
sky130_osu_sc_18T_hs__dffsr_1	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	-0.00083	-0.00165	-0.00181
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.00710	0.00550	0.00496
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.00701	0.00541	0.00488
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	-0.00110	-0.00203	-0.00208
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.00545	0.00379	0.00365

Passive power(pJ) for CK falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last

sky130_osu_sc_18T_hs__dffsr_1	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03912	0.03798	0.03719
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01726	0.01683	0.01708
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02783	0.02719	0.02655
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02793	0.02721	0.02663
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03829	0.03710	0.03755
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01859	0.01820	0.01851
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02223	0.02130	0.02210
sky130_osu_sc_18T_hs__dffsr_l	**(D * RN * SN * !Q * QN)**	0.00000	0.00000	0.00000
	(D * RN * SN * !Q * QN)	0.03912	0.03797	0.03718
	(D * RN * Q * !QN)	0.00000	0.00000	0.00000
	(D * RN * Q * !QN)	0.01726	0.01683	0.01708
	(D * !RN * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * SN * !Q * QN)	0.02783	0.02719	0.02655
	(D * !RN * !SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * !RN * !SN * !Q * QN)	0.02793	0.02721	0.02663
	(!D * RN * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * Q * !QN)	0.03828	0.03710	0.03754
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * RN * SN * !Q * QN) + (!D * !RN * !Q * QN)	0.01859	0.01820	0.01851
	(!D * RN * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * RN * !SN * Q * !QN)	0.02222	0.02129	0.02209

SKY130_OSU_SC_18T_HS__DFFSx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT			OUTPUT	
D	SN	CK	Q	QN
0	1	R	0	1
1	1	R	1	0
x	0	x	1	0
x	1	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dffs_1	57.87540
sky130_osu_sc_18T_hs__dffs_l	57.87540

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)	
	D	SN	CK	Q	QN
sky130_osu_sc_18T_hs__dffs_1	0.00527	0.00895	0.01573	1.44874	1.45756
sky130_osu_sc_18T_hs__dffs_l	0.00527	0.00895	0.01572	0.88672	0.90052

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dffs_1	0.00000	0.00156	0.00178
sky130_osu_sc_18T_hs__dffs_l	0.00000	0.00136	0.00158

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->Q (RR)	0.34237	1.48822	13.27320
	QN->Q (FR)	0.05136	1.04231	13.43230
	SN->Q (FR)	0.29092	1.68831	16.83160
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RR)	0.35163	1.62135	12.48260
	QN->Q (FR)	0.06167	1.14267	13.08130
	SN->Q (FR)	0.29989	1.82190	15.99380

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->Q (RF)	0.48568	1.74593	15.10390
	QN->Q (RF)	0.02960	0.65503	8.51088
sky130_osu_sc_18T_hs__dffs_l	CK->Q (RF)	0.50707	1.96235	14.83220
	QN->Q (RF)	0.03202	0.66306	7.92624

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->QN (RR)	0.43779	1.13425	7.63083
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RR)	0.44643	1.24685	7.63207

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dffs_1	CK->QN (RF)	0.27362	0.69194	3.58139
	SN->QN (FF)	0.22145	0.89321	7.13099
sky130_osu_sc_18T_hs__dffs_l	CK->QN (RF)	0.26986	0.69971	3.23797
	SN->QN (FF)	0.21683	0.90083	6.76042

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.04990	-0.07819	-0.45282
	setup	CK (R)	0.24446	0.27019	1.81668
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.04905	-0.07871	-0.45338
	setup	CK (R)	0.24076	0.27101	1.80888

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.21568	-0.58036	-6.91910
	setup	CK (R)	0.27022	0.59719	7.01962
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.21489	-0.57785	-6.92171
	setup	CK (R)	0.26922	0.59719	7.01944

Constraints(ns) for D rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.04990	-0.07819	-0.45282
	setup	CK (R)	0.24446	0.27019	1.81668
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.04905	-0.07871	-0.45338
	setup	CK (R)	0.24076	0.27101	1.80888

Constraints(ns) for D falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	hold	CK (R)	-0.21568	-0.58036	-6.91910
	setup	CK (R)	0.27022	0.59719	7.01962
sky130_osu_sc_18T_hs__dffs_l	hold	CK (R)	-0.21489	-0.57785	-6.92171
	setup	CK (R)	0.26922	0.59719	7.01944

Constraints(ns) for SN rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	recovery	CK (R)	0.06283	0.11502	2.88249
	removal	CK (R)	-0.02224	-0.08220	-1.00271
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.05996	0.11445	2.68934
	removal	CK (R)	-0.02224	-0.08220	-1.00271

Constraints(ns) for SN rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	recovery	CK (R)	0.06283	0.11502	2.88249
	removal	CK (R)	-0.02224	-0.08220	-1.00271
sky130_osu_sc_18T_hs__dffs_l	recovery	CK (R)	0.05996	0.11445	2.68934
	removal	CK (R)	-0.02224	-0.08220	-1.00271

Constraints(ns) for SN falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	min_pulse_width	SN ()	0.20668	0.62325	13.33370
	min_pulse_width	SN ()	0.20903	0.62325	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	SN ()	0.20397	0.61448	13.33370
	min_pulse_width	SN ()	0.19999	0.61667	13.33370

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	min_pulse_width	CK ()	0.12810	0.51148	13.33370
	min_pulse_width	CK ()	0.24311	0.51148	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.12426	0.51148	13.33370
	min_pulse_width	CK ()	0.23544	0.51148	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dffs_1	min_pulse_width	CK ()	0.35573	0.53120	13.33370
	min_pulse_width	CK ()	0.22778	0.51148	13.33370
sky130_osu_sc_18T_hs__dffs_l	min_pulse_width	CK ()	0.35430	0.52901	13.33370
	min_pulse_width	CK ()	0.22394	0.51148	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01116	0.00811	-0.00279
	SN	-0.00155	-0.07194	-0.92719
	SN	0.02458	0.02184	-0.00832
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00982	0.00772	-0.00464
	SN	-0.00155	-0.05359	-0.56750
	SN	0.02323	0.02148	0.00787

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01283	0.01169	0.00279
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01148	0.01066	0.00722

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01283	0.01170	0.00281
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.01148	0.01067	0.00716

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.01112	0.00806	-0.00281
	SN	-0.00155	-0.07220	-0.93274
	SN	0.02454	0.02180	-0.00748
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	0.00978	0.00767	-0.00507
	SN	-0.00155	-0.05408	-0.57630
	SN	0.02319	0.02142	0.00796

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	-0.00388	-0.00402	-0.00401
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01284	0.01214	0.01167
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00584	0.00525	0.00496
sky130_osu_sc_18T_hs__dffs_l	CK	0.00000	0.00000	0.00000
	CK	-0.00388	-0.00402	-0.00401
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.01284	0.01214	0.01167
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.00584	0.00525	0.00496

Passive power(pJ) for D falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00399	0.00402	0.00401
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02239	0.02201	0.02174
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01056	0.01031	0.01025
sky130_osu_sc_18T_hs__dffs_1	CK	0.00000	0.00000	0.00000
	CK	0.00399	0.00402	0.00401
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * SN * Q * !QN) + (!CK * SN * !Q * QN)	0.02239	0.02201	0.02174
	(!CK * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !SN * Q * !QN)	0.01056	0.01031	0.01025

Passive power(pJ) for SN rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00662	-0.00666	-0.00665
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00489	0.00433	0.00412
sky130_osu_sc_18T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	-0.00662	-0.00666	-0.00665
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.00489	0.00433	0.00412

Passive power(pJ) for SN falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00663	0.00668	0.00667
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01260	0.01212	0.01205
sky130_osu_sc_18T_hs__dffs_l	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00000	0.00000	0.00000
	(CK * Q * !QN) + (!CK * D * Q * !QN)	0.00663	0.00668	0.00667
	(!CK * !D * Q * !QN)	0.00000	0.00000	0.00000
	(!CK * !D * Q * !QN)	0.01260	0.01212	0.01205

Passive power(pJ) for CK rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00084	-0.00167	-0.00183
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00121	-0.00214	-0.00219
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00445	0.00274	0.00266
sky130_osu_sc_18T_hs__dffs_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00084	-0.00167	-0.00183
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	-0.00121	-0.00214	-0.00219
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.00445	0.00274	0.00266

Passive power(pJ) for CK falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dffs_1	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03487	0.03370	0.03289
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01722	0.01677	0.01708
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03485	0.03358	0.03428
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01865	0.01825	0.01857
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02165	0.02073	0.02153
sky130_osu_sc_18T_hs__dffs_l	(D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(D * SN * !Q * QN)	0.03487	0.03371	0.03289
	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01722	0.01678	0.01708
	(!D * SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * SN * Q * !QN)	0.03485	0.03358	0.03428
	(!D * SN * !Q * QN)	0.00000	0.00000	0.00000
	(!D * SN * !Q * QN)	0.01865	0.01825	0.01857
	(!D * !SN * Q * !QN)	0.00000	0.00000	0.00000
	(!D * !SN * Q * !QN)	0.02165	0.02073	0.02153

SKY130_OSU_SC_18T_HS__DFFx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT	
D	CK	Q	QN
0	R	0	1
1	R	1	0
x	x	IQ	IQN

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__dff_1	48.35160
sky130_osu_sc_18T_hs__dff_l	48.35160

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)	
	D	CK	Q	QN
sky130_osu_sc_18T_hs__dff_1	0.00542	0.01567	1.49908	1.50142
sky130_osu_sc_18T_hs__dff_l	0.00542	0.01566	0.88557	0.88445

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__dff_1	0.00000	0.00161	0.00177
sky130_osu_sc_18T_hs__dff_l	0.00000	0.00141	0.00157

Delay Information

Delay(ns) to Q rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->Q (RR)	0.27910	1.39977	13.14480
	QN->Q (FR)	0.04884	1.02449	13.32290
sky130_osu_sc_18T_hs__dff_l	CK->Q (RR)	0.29892	1.57234	12.51010
	QN->Q (FR)	0.06266	1.15394	13.21890

Delay(ns) to Q falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->Q (RF)	0.41705	1.66039	15.03230
	QN->Q (RF)	0.02706	0.61828	8.10355
sky130_osu_sc_18T_hs__dff_l	CK->Q (RF)	0.45035	1.91735	14.85720
	QN->Q (RF)	0.03207	0.66269	7.92309

Delay(ns) to QN rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->QN (RR)	0.37314	1.06114	7.58336
sky130_osu_sc_18T_hs__dff_l	CK->QN (RR)	0.39066	1.18962	7.52175

Delay(ns) to QN falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__dff_1	CK->QN (RF)	0.21732	0.61933	3.46814
sky130_osu_sc_18T_hs__dff_l	CK->QN (RF)	0.22017	0.64273	3.16570

Constraint Information

Constraints(ns) for D rising :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	hold	CK (R)	-0.04917	-0.07767	-0.47963
	setup	CK (R)	0.17680	0.21250	1.81953
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.04802	-0.07827	-0.47887
	setup	CK (R)	0.17639	0.20907	1.79651

Constraints(ns) for D falling :

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	hold	CK (R)	-0.20069	-0.57453	-6.89395
	setup	CK (R)	0.23526	0.59450	7.01246
sky130_osu_sc_18T_hs__dff_l	hold	CK (R)	-0.19987	-0.57737	-6.89350
	setup	CK (R)	0.23526	0.59450	7.01295

Constraints(ns) for CK rising (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	min_pulse_width	CK ()	0.10893	0.51148	13.33370
	min_pulse_width	CK ()	0.21244	0.51148	13.33370
sky130_osu_sc_18T_hs__dff_l	min_pulse_width	CK ()	0.10509	0.51148	13.33370
	min_pulse_width	CK ()	0.20861	0.51148	13.33370

Constraints(ns) for CK falling (conditional):

Cell Name	Timing Check	Ref Pin(trans)	Reference Slew Rate(ns)		
			first	mid	last
sky130_osu_sc_18T_hs__dff_1	**min_pulse_width**	**CK ()**	0.28912	0.51148	13.33370
	min_pulse_width	**CK ()**	0.18560	0.51148	13.33370
sky130_osu_sc_18T_hs__dff_l	**min_pulse_width**	**CK ()**	0.28912	0.51148	13.33370
	min_pulse_width	**CK ()**	0.18560	0.51148	13.33370

Power Information

Internal switching power(pJ) to Q rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01182	0.00940	-0.00441
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01059	0.00839	-0.00392

Internal switching power(pJ) to Q falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01308	0.01213	0.00441
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01187	0.01106	0.00719

Internal switching power(pJ) to QN rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01309	0.01213	0.00448
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01187	0.01108	0.00717

Internal switching power(pJ) to QN falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.01177	0.00937	-0.00448
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.01054	0.00833	-0.00408

Passive power(pJ) for D rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	-0.00375	-0.00396	-0.00395
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01211	0.01157	0.01117
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	-0.00375	-0.00396	-0.00395
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.01212	0.01158	0.01118

Passive power(pJ) for D falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	CK	0.00000	0.00000	0.00000
	CK	0.00393	0.00396	0.00395
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02319	0.02272	0.02245
sky130_osu_sc_18T_hs__dff_l	CK	0.00000	0.00000	0.00000
	CK	0.00393	0.00396	0.00395
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.00000	0.00000	0.00000
	(!CK * Q * !QN) + (!CK * !Q * QN)	0.02320	0.02273	0.02245

Passive power(pJ) for CK rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00085	-0.00167	-0.00180
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00120	-0.00212	-0.00217
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	-0.00085	-0.00167	-0.00180
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	-0.00120	-0.00212	-0.00217

Passive power(pJ) for CK falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__dff_1	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01716	0.01673	0.01699
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03422	0.03315	0.03236
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03547	0.03418	0.03479
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01857	0.01816	0.01849
sky130_osu_sc_18T_hs__dff_l	(D * Q * !QN)	0.00000	0.00000	0.00000
	(D * Q * !QN)	0.01716	0.01674	0.01699
	(D * !Q * QN)	0.00000	0.00000	0.00000
	(D * !Q * QN)	0.03423	0.03316	0.03237
	(!D * Q * !QN)	0.00000	0.00000	0.00000
	(!D * Q * !QN)	0.03548	0.03419	0.03481
	(!D * !Q * QN)	0.00000	0.00000	0.00000
	(!D * !Q * QN)	0.01857	0.01817	0.01849

SKY130_OSU_SC_18T_HS__INVx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT	OUTPUT
A	Y
0	1
1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__inv_1	6.59340
sky130_osu_sc_18T_hs__inv_10	32.96700
sky130_osu_sc_18T_hs__inv_2	9.52380
sky130_osu_sc_18T_hs__inv_3	12.45420
sky130_osu_sc_18T_hs__inv_4	15.38460
sky130_osu_sc_18T_hs__inv_6	21.24540
sky130_osu_sc_18T_hs__inv_8	27.10620
sky130_osu_sc_18T_hs__inv_l	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)	Max Cap(pf)
	A	Y
sky130_osu_sc_18T_hs__inv_1	0.00535	1.46338
sky130_osu_sc_18T_hs__inv_10	0.05044	13.46516
sky130_osu_sc_18T_hs__inv_2	0.01028	2.91330
sky130_osu_sc_18T_hs__inv_3	0.01533	4.14862
sky130_osu_sc_18T_hs__inv_4	0.02030	5.69105
sky130_osu_sc_18T_hs__inv_6	0.03043	8.26002
sky130_osu_sc_18T_hs__inv_8	0.04045	10.77244
sky130_osu_sc_18T_hs__inv_l	0.00407	0.89015

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__inv_1	0.00000	0.00021	0.00036
sky130_osu_sc_18T_hs__inv_10	0.00000	0.00207	0.00358
sky130_osu_sc_18T_hs__inv_2	0.00000	0.00041	0.00072
sky130_osu_sc_18T_hs__inv_3	0.00000	0.00062	0.00107
sky130_osu_sc_18T_hs__inv_4	0.00000	0.00083	0.00143
sky130_osu_sc_18T_hs__inv_6	0.00000	0.00124	0.00215
sky130_osu_sc_18T_hs__inv_8	0.00000	0.00166	0.00286
sky130_osu_sc_18T_hs__inv_l	0.00000	0.00011	0.00016

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__inv_1	**A->Y (FR)**	0.04673	0.96532	12.47210
sky130_osu_sc_18T_hs__inv_10	**A->Y (FR)**	0.07082	0.68524	12.54690
sky130_osu_sc_18T_hs__inv_2	**A->Y (FR)**	0.03762	0.83708	12.46700
sky130_osu_sc_18T_hs__inv_3	**A->Y (FR)**	0.04192	0.78504	12.43170
sky130_osu_sc_18T_hs__inv_4	**A->Y (FR)**	0.04345	0.74671	12.53220
sky130_osu_sc_18T_hs__inv_6	**A->Y (FR)**	0.04981	0.71048	12.45900
sky130_osu_sc_18T_hs__inv_8	**A->Y (FR)**	0.05953	0.68935	12.39990
sky130_osu_sc_18T_hs__inv_l	**A->Y (FR)**	0.05931	1.09540	12.58040

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__inv_1	**A->Y (RF)**	0.02407	0.54346	7.11015
sky130_osu_sc_18T_hs__inv_10	**A->Y (RF)**	0.04094	0.37483	7.08182
sky130_osu_sc_18T_hs__inv_2	**A->Y (RF)**	0.02068	0.47798	7.11567
sky130_osu_sc_18T_hs__inv_3	**A->Y (RF)**	0.02281	0.44840	7.11030
sky130_osu_sc_18T_hs__inv_4	**A->Y (RF)**	0.02318	0.42807	7.17401
sky130_osu_sc_18T_hs__inv_6	**A->Y (RF)**	0.02958	0.40082	7.11531
sky130_osu_sc_18T_hs__inv_8	**A->Y (RF)**	0.03532	0.38418	7.06983
sky130_osu_sc_18T_hs__inv_l	**A->Y (RF)**	0.02852	0.59560	7.07172

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__inv_1	A	0.00000	0.00000	0.00000
	A	0.00605	0.00596	0.00606
sky130_osu_sc_18T_hs__inv_10	A	0.00000	0.00000	0.00000
	A	0.05226	0.05318	0.01888
sky130_osu_sc_18T_hs__inv_2	A	0.00000	0.00000	0.00000
	A	0.01093	0.01093	0.00265
sky130_osu_sc_18T_hs__inv_3	A	0.00000	0.00000	0.00000
	A	0.01671	0.01662	0.01712
sky130_osu_sc_18T_hs__inv_4	A	0.00000	0.00000	0.00000
	A	0.02160	0.02046	0.00653
sky130_osu_sc_18T_hs__inv_6	A	0.00000	0.00000	0.00000
	A	0.03191	0.03216	0.03325
sky130_osu_sc_18T_hs__inv_8	A	0.00000	0.00000	0.00000
	A	0.04212	0.04264	0.04420
sky130_osu_sc_18T_hs__inv_l	A	0.00000	0.00000	0.00000
	A	0.00464	0.00455	0.00455

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__inv_1	**A**	0.00000	0.00000	0.00000
	A	-0.00128	-0.00136	-0.00133
sky130_osu_sc_18T_hs__inv_10	**A**	0.00000	0.00000	0.00000
	A	-0.02214	-0.02152	-0.01888
sky130_osu_sc_18T_hs__inv_2	**A**	0.00000	0.00000	0.00000
	A	-0.00407	-0.00408	-0.00265
sky130_osu_sc_18T_hs__inv_3	**A**	0.00000	0.00000	0.00000
	A	-0.00546	-0.00543	-0.00515
sky130_osu_sc_18T_hs__inv_4	**A**	0.00000	0.00000	0.00000
	A	-0.00842	-0.00820	-0.00653
sky130_osu_sc_18T_hs__inv_6	**A**	0.00000	0.00000	0.00000
	A	-0.01281	-0.01254	-0.01156
sky130_osu_sc_18T_hs__inv_8	**A**	0.00000	0.00000	0.00000
	A	-0.01753	-0.01697	-0.01531
sky130_osu_sc_18T_hs__inv_l	**A**	0.00000	0.00000	0.00000
	A	-0.00089	-0.00096	-0.00098

SKY130_OSU_SC_18T_HS__MUX2

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT			OUTPUT
A0	A1	S0	Y
0	0	x	0
0	1	0	0
x	1	1	1
1	x	0	1
1	0	1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__mux2_1	18.31500

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	S0	Y
sky130_osu_sc_18T_hs__mux2_1	0.03521	0.03501	0.01087	0.02710

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__mux2_1	0.00000	0.00064	0.00107

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__mux2_1	A0->Y (RR)	-	0.02130	0.28918	0.79073
	A1->Y (RR)	-	0.02412	0.29588	0.79414
	S0->Y (RR)	(!A0 * A1)	0.06017	0.24895	0.25641
	S0->Y (FR)	(A0 * !A1)	0.06627	0.45359	3.58619

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__mux2_1	A0->Y (FF)	-	0.01952	0.19987	1.21279
	A1->Y (FF)	-	0.01845	0.19709	1.20792
	S0->Y (FF)	(!A0 * A1)	0.10290	0.47169	3.06412
	S0->Y (RF)	(A0 * !A1)	0.02824	0.18450	0.55147

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	-0.00639	-0.00639	-0.00641
	A1	-	0.00000	0.00000	0.00000
	A1	-	-0.00443	-0.00444	-0.00445
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00736	0.00690	0.00756
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	-0.00423	-0.00502	-0.00492

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__mux2_1	A0	-	0.00000	0.00000	0.00000
	A0	-	0.00639	0.00641	0.00641
	A1	-	0.00000	0.00000	0.00000
	A1	-	0.00443	0.00444	0.00445
	S0	(A0 * !A1)	0.00000	0.00000	0.00000
	S0	(A0 * !A1)	0.00126	0.00049	0.00062
	S0	(!A0 * A1)	0.00000	0.00000	0.00000
	S0	(!A0 * A1)	0.01616	0.01571	0.01622

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	-0.00169	-0.00168	-0.00168

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00000	0.00000	0.00000
	(A1 * S0 * Y) + (!A1 * S0 * !Y)	0.00169	0.00168	0.00168

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	-0.00201	-0.00200	-0.00201

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !S0 * Y) + (!A0 * !S0 * !Y)	0.00201	0.00200	0.00201

Passive power(pJ) for S0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	-0.00151	-0.00227	-0.00217
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	-0.00147	-0.00226	-0.00218

Passive power(pJ) for S0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__mux2_1	(A0 * A1 * Y)	0.00000	0.00000	0.00000
	(A0 * A1 * Y)	0.01213	0.01170	0.01224
	(!A0 * !A1 * !Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !Y)	0.01138	0.01100	0.01159

SKY130_OSU_SC_18T_HS__NAND2x

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	x	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__nand2_1	9.52380
sky130_osu_sc_18T_hs__nand2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__nand2_1	0.00537	0.00532	1.45203
sky130_osu_sc_18T_hs__nand2_l	0.00408	0.00405	0.88384

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nand2_1	0.00000	0.00023	0.00072
sky130_osu_sc_18T_hs__nand2_l	0.00000	0.00013	0.00032

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nand2_1	A->Y (FR)	0.04842	0.97091	12.47020
	B->Y (FR)	0.05775	0.97152	12.39500
sky130_osu_sc_18T_hs__nand2_l	A->Y (FR)	0.06105	1.09924	12.55600
	B->Y (FR)	0.07271	1.10672	12.55190

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nand2_1	A->Y (RF)	0.03358	0.65487	8.48203
	B->Y (RF)	0.03795	0.63665	8.08693
sky130_osu_sc_18T_hs__nand2_l	A->Y (RF)	0.04041	0.72452	8.40561
	B->Y (RF)	0.04482	0.70682	8.01410

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	0.00646	0.00634	0.00193
	B	0.00000	0.00000	0.00000
	B	0.00799	0.00783	0.00793
sky130_osu_sc_18T_hs__nand2_l	A	0.00000	0.00000	0.00000
	A	0.00490	0.00480	0.00241
	B	0.00000	0.00000	0.00000
	B	0.00596	0.00585	0.00584

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	A	0.00000	0.00000	0.00000
	A	-0.00084	-0.00097	-0.00094
	B	0.00000	0.00000	0.00000
	B	-0.00080	-0.00090	-0.00092
sky130_osu_sc_18T_hs__nand2_l	A	0.00000	0.00000	0.00000
	A	-0.00064	-0.00072	-0.00074
	B	0.00000	0.00000	0.00000
	B	-0.00061	-0.00068	-0.00072

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00444	-0.00448	-0.00449
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	-0.00321	-0.00324	-0.00324

Passive power(pJ) for A falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00447	0.00450	0.00449
sky130_osu_sc_18T_hs__nand2_l	(!B * Y)	0.00000	0.00000	0.00000
	(!B * Y)	0.00323	0.00325	0.00325

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00416	-0.00419	-0.00417
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00301	-0.00300	-0.00301

Passive power(pJ) for B falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nand2_1	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00416	0.00421	0.00418
sky130_osu_sc_18T_hs__nand2_l	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00301	0.00300	0.00302

SKY130_OSU_SC_18T_HS__NOR2x

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
x	1	0
1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__nor2_1	9.52380
sky130_osu_sc_18T_hs__nor2_l	9.52380

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__nor2_1	0.00532	0.00567	0.71369
sky130_osu_sc_18T_hs__nor2_l	0.00397	0.00434	0.41637

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__nor2_1	0.00000	0.00023	0.00036
sky130_osu_sc_18T_hs__nor2_l	0.00000	0.00013	0.00016

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nor2_1	A->Y (FR)	0.10793	1.22749	12.79280
	B->Y (FR)	0.08525	1.17128	12.44000
sky130_osu_sc_18T_hs__nor2_l	A->Y (FR)	0.14066	1.42563	12.80060
	B->Y (FR)	0.11951	1.37696	12.57520

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__nor2_1	A->Y (RF)	0.02965	0.45353	4.97490
	B->Y (RF)	0.02515	0.44664	4.95535
sky130_osu_sc_18T_hs__nor2_l	A->Y (RF)	0.03370	0.49437	4.95143
	B->Y (RF)	0.02970	0.48510	4.93406

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00822	0.00812	0.00780
	B	0.00000	0.00000	0.00000
	B	0.00653	0.00634	0.00639
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00595	0.00586	0.00582
	B	0.00000	0.00000	0.00000
	B	0.00493	0.00476	0.00473

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	A	0.00000	0.00000	0.00000
	A	0.00055	0.00022	0.00013
	B	0.00000	0.00000	0.00000
	B	-0.00109	-0.00112	-0.00124
sky130_osu_sc_18T_hs__nor2_l	A	0.00000	0.00000	0.00000
	A	0.00033	0.00011	0.00003
	B	0.00000	0.00000	0.00000
	B	-0.00072	-0.00075	-0.00087

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00376	-0.00399	-0.00397
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	-0.00265	-0.00279	-0.00280

Passive power(pJ) for A falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00396	0.00399	0.00397
sky130_osu_sc_18T_hs__nor2_l	(B * !Y)	0.00000	0.00000	0.00000
	(B * !Y)	0.00279	0.00279	0.00280

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00228	-0.00230	-0.00229
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00167	-0.00168	-0.00167

Passive power(pJ) for B falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__nor2_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00237	0.00239	0.00232
sky130_osu_sc_18T_hs__nor2_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00173	0.00174	0.00169

SKY130_OSU_SC_18T_HS__OAI21

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT			OUTPUT
A0	A1	B0	Y
0	0	x	1
x	1	0	1
x	1	1	0
1	x	0	1
1	x	1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__oai21_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)			Max Cap(pf)
	A0	A1	B0	Y
sky130_osu_sc_18T_hs__oai21_l	0.00540	0.00542	0.00455	0.72049

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai21_l	0.00000	0.00020	0.00052

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai21_l	A0->Y (FR)	0.11858	1.21466	12.59390
	A1->Y (FR)	0.14728	1.27684	12.92830
	B0->Y (FR)	0.07543	1.02796	11.24090

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai21_l	A0->Y (RF)	0.04685	0.54108	5.74148
	A1->Y (RF)	0.05258	0.54131	5.68906
	B0->Y (RF)	0.03722	0.57522	6.33293

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00875	0.00853	0.00852
	A1	0.00000	0.00000	0.00000
	A1	0.01049	0.01031	0.00905
	B0	0.00713	0.00690	0.00697

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	A0	0.00000	0.00000	0.00000
	A0	0.00023	0.00014	0.00002
	A1	0.00000	0.00000	0.00000
	A1	0.00184	0.00156	0.00145
	B0	0.00267	0.00255	0.00245

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00228	-0.00231	-0.00229
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	-0.00386	-0.00400	-0.00399
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	-0.00408	-0.00410	-0.00409

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00238	0.00239	0.00232
	(A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * Y)	0.00396	0.00400	0.00399
	(!A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * Y)	0.00408	0.00414	0.00410

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00371	-0.00392	-0.00391
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	-0.00384	-0.00398	-0.00397
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	-0.00404	-0.00406	-0.00405

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00388	0.00392	0.00391
	(A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * Y)	0.00394	0.00398	0.00397
	(!A0 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * Y)	0.00404	0.00410	0.00406

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	-0.00328	-0.00332	-0.00335

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai21_l	(!A0 * !A1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * Y)	0.00334	0.00337	0.00335

SKY130_OSU_SC_18T_HS__OAI22

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT				OUTPUT
A0	A1	B0	B1	Y
0	0	x	x	1
x	1	0	0	1
x	1	x	1	0
x	1	1	x	0
1	x	0	0	1
1	x	x	1	0
1	x	1	x	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__oai22_l	15.38460

Pin Capacitance Information

Cell Name	Pin Cap(pf)				Max Cap(pf)
	A0	A1	B0	B1	Y
sky130_osu_sc_18T_hs__oai22_l	0.00520	0.00551	0.00567	0.00550	0.72223

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__oai22_l	0.00000	0.00036	0.00072

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai22_l	A0->Y (FR)	0.14944	1.27801	12.92940
	A1->Y (FR)	0.13810	1.23056	12.59430
	B0->Y (FR)	0.09533	1.18865	12.56350
	B1->Y (FR)	0.11880	1.24587	12.91680

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__oai22_l	A0->Y (RF)	0.07289	0.58008	5.83119
	A1->Y (RF)	0.05965	0.56040	5.77985
	B0->Y (RF)	0.04999	0.58848	6.36494
	B1->Y (RF)	0.06462	0.61887	6.55480

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.01332	0.01316	0.01244
	A1	0.01158	0.01132	0.01131
	B0	0.00876	0.00853	0.00853
	B1	0.01057	0.01040	0.00949

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	A0	0.00287	0.00260	0.00244
	A1	0.00136	0.00125	0.00108
	B0	0.00135	0.00121	0.00107
	B1	0.00291	0.00259	0.00244

Passive power(pJ) for A0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00376	-0.00399	-0.00397
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	-0.00376	-0.00399	-0.00397
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	-0.00385	-0.00400	-0.00398
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	-0.00405	-0.00406	-0.00406

Passive power(pJ) for A0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00394	0.00399	0.00397
	(A1 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * B1 * !Y)	0.00394	0.00399	0.00397
	(A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A1 * !B0 * !B1 * Y)	0.00395	0.00400	0.00398
	(!A1 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A1 * !B0 * !B1 * Y)	0.00405	0.00410	0.00407

Passive power(pJ) for A1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	-0.00227	-0.00229	-0.00228
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	-0.00227	-0.00229	-0.00228
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	-0.00382	-0.00398	-0.00395
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	-0.00404	-0.00404	-0.00405

Passive power(pJ) for A1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A0 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * B0 * !Y)	0.00236	0.00238	0.00231
	(A0 * !B0 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * B1 * !Y)	0.00236	0.00238	0.00231
	(A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(A0 * !B0 * !B1 * Y)	0.00393	0.00398	0.00395
	(!A0 * !B0 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !B0 * !B1 * Y)	0.00404	0.00409	0.00406

Passive power(pJ) for B0 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	-0.00226	-0.00228	-0.00227
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	-0.00226	-0.00228	-0.00227
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	-0.00422	-0.00435	-0.00435
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	-0.00436	-0.00438	-0.00445

Passive power(pJ) for B0 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A1 * B1 * !Y)	0.00235	0.00237	0.00230
	(A0 * !A1 * B1 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B1 * !Y)	0.00235	0.00237	0.00230
	(!A0 * !A1 * B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B1 * Y)	0.00435	0.00435	0.00435
	(!A0 * !A1 * !B1 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B1 * Y)	0.00444	0.00449	0.00446

Passive power(pJ) for B1 rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	-0.00371	-0.00394	-0.00392
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	-0.00371	-0.00390	-0.00392
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	-0.00430	-0.00445	-0.00443
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	-0.00441	-0.00447	-0.00451

Passive power(pJ) for B1 falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__oai22_l	(A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A1 * B0 * !Y)	0.00390	0.00394	0.00392
	(A0 * !A1 * B0 * !Y)	0.00000	0.00000	0.00000
	(A0 * !A1 * B0 * !Y)	0.00390	0.00390	0.00392
	(!A0 * !A1 * B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * B0 * Y)	0.00441	0.00446	0.00443
	(!A0 * !A1 * !B0 * Y)	0.00000	0.00000	0.00000
	(!A0 * !A1 * !B0 * Y)	0.00450	0.00453	0.00452

SKY130_OSU_SC_18T_HS__OR2x

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
x	1	1
1	x	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__or2_1	12.45420
sky130_osu_sc_18T_hs__or2_2	15.38460
sky130_osu_sc_18T_hs__or2_4	21.24540
sky130_osu_sc_18T_hs__or2_8	32.96700
sky130_osu_sc_18T_hs__or2_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__or2_1	0.00565	0.00549	1.47754
sky130_osu_sc_18T_hs__or2_2	0.00565	0.00549	2.91763
sky130_osu_sc_18T_hs__or2_4	0.00564	0.00549	5.63733
sky130_osu_sc_18T_hs__or2_8	0.00564	0.00550	10.77415
sky130_osu_sc_18T_hs__or2_l	0.00437	0.00416	0.88746

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__or2_1	0.00000	0.00036	0.00047
sky130_osu_sc_18T_hs__or2_2	0.00000	0.00049	0.00083
sky130_osu_sc_18T_hs__or2_4	0.00000	0.00075	0.00154
sky130_osu_sc_18T_hs__or2_8	0.00000	0.00128	0.00298
sky130_osu_sc_18T_hs__or2_l	0.00000	0.00021	0.00027

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__or2_1	A->Y (RR)	0.08764	0.77407	7.22065
	B->Y (RR)	0.08109	0.74932	7.07604
sky130_osu_sc_18T_hs__or2_2	A->Y (RR)	0.09495	0.69055	7.43630
	B->Y (RR)	0.08775	0.66941	7.31240
sky130_osu_sc_18T_hs__or2_4	A->Y (RR)	0.12510	0.67695	7.83422
	B->Y (RR)	0.11766	0.66235	7.75049
sky130_osu_sc_18T_hs__or2_8	A->Y (RR)	0.18177	0.72541	8.35571
	B->Y (RR)	0.17406	0.71428	8.28142
sky130_osu_sc_18T_hs__or2_l	A->Y (RR)	0.10665	0.93197	7.66157
	B->Y (RR)	0.10018	0.91397	7.51223

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__or2_1	A->Y (FF)	0.19041	0.83060	6.97594
	B->Y (FF)	0.15938	0.77092	6.35544
sky130_osu_sc_18T_hs__or2_2	A->Y (FF)	0.23951	0.85560	7.29510
	B->Y (FF)	0.20863	0.80032	6.73132
sky130_osu_sc_18T_hs__or2_4	A->Y (FF)	0.34997	0.96656	7.82711
	B->Y (FF)	0.31925	0.90634	7.30478
sky130_osu_sc_18T_hs__or2_8	A->Y (FF)	0.57105	1.20947	8.44582
	B->Y (FF)	0.54038	1.14720	8.02672
sky130_osu_sc_18T_hs__or2_l	A->Y (FF)	0.24211	0.91768	6.96463
	B->Y (FF)	0.20772	0.86520	6.42275

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.00635	0.00555	0.00544
	B	0.00000	0.00000	0.00000
	B	0.00481	0.00421	0.00431
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01122	0.01072	0.01055
	B	0.00000	0.00000	0.00000
	B	0.00961	0.00944	0.00963
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02162	0.02178	0.02235
	B	0.00000	0.00000	0.00000
	B	0.01998	0.02063	0.02170
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.04198	0.04349	0.04699
	B	0.00000	0.00000	0.00000
	B	0.04031	0.04249	0.04377
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.00466	0.00405	0.00395
	B	0.00000	0.00000	0.00000
	B	0.00367	0.00347	0.00311

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	A	0.00000	0.00000	0.00000
	A	0.01363	0.01356	0.01352
	B	0.00000	0.00000	0.00000
	B	0.01163	0.01158	0.01214
sky130_osu_sc_18T_hs__or2_2	A	0.00000	0.00000	0.00000
	A	0.01664	0.01725	0.01732
	B	0.00000	0.00000	0.00000
	B	0.01464	0.01522	0.01586
sky130_osu_sc_18T_hs__or2_4	A	0.00000	0.00000	0.00000
	A	0.02412	0.02607	0.02642
	B	0.00000	0.00000	0.00000
	B	0.02216	0.02388	0.02480
sky130_osu_sc_18T_hs__or2_8	A	0.00000	0.00000	0.00000
	A	0.03925	0.04273	0.04463
	B	0.00000	0.00000	0.00000
	B	0.03737	0.04061	0.04283
sky130_osu_sc_18T_hs__or2_l	A	0.00000	0.00000	0.00000
	A	0.01026	0.01015	0.01012
	B	0.00000	0.00000	0.00000
	B	0.00888	0.00883	0.00894

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00381	-0.00400	-0.00399
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00380	-0.00400	-0.00399
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00380	-0.00401	-0.00399
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00380	-0.00401	-0.00399
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	-0.00268	-0.00280	-0.00281

Passive power(pJ) for A falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00397	0.00400	0.00399
sky130_osu_sc_18T_hs__or2_2	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00397	0.00400	0.00399
sky130_osu_sc_18T_hs__or2_4	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00397	0.00402	0.00399
sky130_osu_sc_18T_hs__or2_8	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00397	0.00402	0.00399
sky130_osu_sc_18T_hs__or2_l	(B * Y)	0.00000	0.00000	0.00000
	(B * Y)	0.00280	0.00280	0.00281

Passive power(pJ) for B rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00229	-0.00230	-0.00230
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00229	-0.00230	-0.00230
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00229	-0.00230	-0.00230
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00229	-0.00230	-0.00230
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	-0.00169	-0.00171	-0.00170

Passive power(pJ) for B falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__or2_1	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00239	0.00241	0.00233
sky130_osu_sc_18T_hs__or2_2	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00239	0.00241	0.00233
sky130_osu_sc_18T_hs__or2_4	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00239	0.00241	0.00233
sky130_osu_sc_18T_hs__or2_8	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00239	0.00241	0.00233
sky130_osu_sc_18T_hs__or2_l	(A * Y)	0.00000	0.00000	0.00000
	(A * Y)	0.00176	0.00177	0.00172

SKY130_OSU_SC_18T_HS__TBUFIx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT
A	OE	Y
-	0	HiZ
0	1	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__tbufi_1	12.45420
sky130_osu_sc_18T_hs__tbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_hs__tbufi_1	0.00567	0.00713	0.72355
sky130_osu_sc_18T_hs__tbufi_l	0.00435	0.00547	0.41837

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tbufi_1	0.00000	0.00025	0.00072
sky130_osu_sc_18T_hs__tbufi_l	0.00000	0.00015	0.00032

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tbufi_1	A->Y (FR)	0.08168	1.17296	12.53360
	OE->Y (FR)	0.07687	0.42764	4.68889
	OE->Y (RR)	0.12653	0.98216	7.41333
sky130_osu_sc_18T_hs__tbufi_l	A->Y (FR)	0.11540	1.37608	12.62010
	OE->Y (FR)	0.09168	0.45870	4.68864
	OE->Y (RR)	0.16010	1.21558	7.89171

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tbufi_1	A->Y (RF)	0.03230	0.53429	5.90379
	OE->Y (FF)	0.07727	0.42730	4.68890
	OE->Y (RF)	0.03134	0.50589	5.54746
sky130_osu_sc_18T_hs__tbufi_l	A->Y (RF)	0.03951	0.57742	5.80454
	OE->Y (FF)	0.09250	0.46285	4.68865
	OE->Y (RF)	0.03877	0.55263	5.46093

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	0.00616	0.00595	0.00598
	OE	0.00000	0.00000	0.00000
	OE	0.00585	0.00511	0.00528
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	0.00467	0.00450	0.00444
	OE	0.00000	0.00000	0.00000
	OE	0.00418	0.00363	0.00360

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00110	-0.00113	-0.00123
	OE	0.00000	0.00000	0.00000
	OE	0.00433	0.00361	0.00372
sky130_osu_sc_18T_hs__tbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00073	-0.00076	-0.00086
	OE	0.00000	0.00000	0.00000
	OE	0.00305	0.00249	0.00243

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00338	-0.00338	-0.00339
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00316	-0.00322	-0.00317
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	-0.00256	-0.00259	-0.00257
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	-0.00242	-0.00245	-0.00243

Passive power(pJ) for A falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00338	0.00338	0.00339
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00323	0.00326	0.00321
sky130_osu_sc_18T_hs__tbufi_l	(!OE * Y)	0.00000	0.00000	0.00000
	(!OE * Y)	0.00256	0.00259	0.00257
	(!OE * !Y)	0.00000	0.00000	0.00000
	(!OE * !Y)	0.00246	0.00248	0.00245

Passive power(pJ) for OE rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00247	0.00174	0.00187
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00226	0.00153	0.00165
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00171	0.00115	0.00110
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00156	0.00100	0.00093

Passive power(pJ) for OE falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00690	0.00652	0.00691
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00715	0.00660	0.00706
sky130_osu_sc_18T_hs__tbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00543	0.00506	0.00507
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00562	0.00516	0.00519

SKY130_OSU_SC_18T_HS__TNBUFIx

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT
A	OE	Y
0	0	1
1	0	0
-	1	HiZ

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__tnbufi_1	12.45420
sky130_osu_sc_18T_hs__tnbufi_l	12.45420

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	OE	Y
sky130_osu_sc_18T_hs__tnbufi_1	0.00566	0.00887	0.71291
sky130_osu_sc_18T_hs__tnbufi_l	0.00434	0.00658	0.41550

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__tnbufi_1	0.00000	0.00035	0.00041
sky130_osu_sc_18T_hs__tnbufi_l	0.00000	0.00018	0.00022

Delay Information

Delay(ns) to Y rising :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tnbufi_1	A->Y (FR)	0.08252	1.16639	12.42570
	OE->Y (RR)	0.02966	0.34728	4.69011
	OE->Y (FR)	0.10095	1.22019	12.76210
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (FR)	0.11624	1.37206	12.57120
	OE->Y (RR)	0.03275	0.34755	4.69023
	OE->Y (FR)	0.13071	1.41742	12.78680

Delay(ns) to Y falling :

Cell Name	Timing Arc(Dir)	Delay(ns)		
		First	Mid	Last
sky130_osu_sc_18T_hs__tnbufi_1	A->Y (RF)	0.03186	0.53167	5.85796
	OE->Y (RF)	0.02922	0.34727	4.69013
	OE->Y (FF)	0.07483	0.61857	5.01663
sky130_osu_sc_18T_hs__tnbufi_l	A->Y (RF)	0.03884	0.57601	5.78429
	OE->Y (RF)	0.03249	0.34754	4.69036
	OE->Y (FF)	0.09325	0.68169	5.02091

Power Information

Internal switching power(pJ) to Y rising :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	0.00631	0.00610	0.00614
	OE	0.00000	0.00000	0.00000
	OE	0.01497	0.01471	0.01481
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	0.00483	0.00465	0.00459
	OE	0.00000	0.00000	0.00000
	OE	0.01107	0.01080	0.01100

Internal switching power(pJ) to Y falling :

Cell Name	Input	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	A	0.00000	0.00000	0.00000
	A	-0.00130	-0.00131	-0.00143
	OE	0.00000	0.00000	0.00000
	OE	0.01367	0.01337	0.01411
sky130_osu_sc_18T_hs__tnbufi_l	A	0.00000	0.00000	0.00000
	A	-0.00092	-0.00094	-0.00105
	OE	0.00000	0.00000	0.00000
	OE	0.01009	0.00980	0.01001

Passive power(pJ) for A rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00295	-0.00299	-0.00297
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00275	-0.00279	-0.00277
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	-0.00216	-0.00218	-0.00217
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	-0.00203	-0.00205	-0.00204

Passive power(pJ) for A falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00295	0.00299	0.00297
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00282	0.00284	0.00280
sky130_osu_sc_18T_hs__tnbufi_l	(OE * Y)	0.00000	0.00000	0.00000
	(OE * Y)	0.00216	0.00218	0.00217
	(OE * !Y)	0.00000	0.00000	0.00000
	(OE * !Y)	0.00206	0.00208	0.00205

Passive power(pJ) for OE rising (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00491	-0.00592	-0.00574
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00471	-0.00579	-0.00567
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	-0.00340	-0.00412	-0.00418
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	-0.00328	-0.00404	-0.00414

Passive power(pJ) for OE falling (conditional):

Cell Name	When	Power(pJ)		
		first	mid	last
sky130_osu_sc_18T_hs__tnbufi_1	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.01160	0.01135	0.01207
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.01140	0.01114	0.01182
sky130_osu_sc_18T_hs__tnbufi_l	(A * !Y)	0.00000	0.00000	0.00000
	(A * !Y)	0.00861	0.00838	0.00851
	(!A * Y)	0.00000	0.00000	0.00000
	(!A * Y)	0.00847	0.00822	0.00839

SKY130_OSU_SC_18T_HS__XNOR2

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__xnor2_l	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__xnor2_l	0.01119	0.01018	0.72698

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xnor2_l	0.00000	0.00071	0.00113

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xnor2_l	A->Y (RR)	B	0.16163	1.03449	7.57867
	A->Y (FR)	!B	0.11011	1.20338	12.56070
	B->Y (RR)	A	0.12899	0.99885	7.49080
	B->Y (FR)	!A	0.14159	1.26343	12.91170

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xnor2_l	A->Y (FF)	B	0.12563	0.71960	5.54198
	A->Y (RF)	!B	0.04763	0.53224	5.69819
	B->Y (FF)	A	0.11905	0.71293	5.53985
	B->Y (RF)	!A	0.05421	0.54178	5.70589

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00534	0.00449	0.00461
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01478	0.01402	0.01465
	B	A	0.00000	0.00000	0.00000
	B	A	0.00212	0.00141	0.00154
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01596	0.01540	0.01570

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xnor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01833	0.01736	0.01769
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00418	0.00336	0.00333
	B	A	0.00000	0.00000	0.00000
	B	A	0.01699	0.01673	0.01729
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00506	0.00408	0.00402

SKY130_OSU_SC_18T_HS__XOR2

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT		OUTPUT
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__xor2_1	21.24540

Pin Capacitance Information

Cell Name	Pin Cap(pf)		Max Cap(pf)
	A	B	Y
sky130_osu_sc_18T_hs__xor2_1	0.01115	0.01022	0.71871

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__xor2_1	0.00000	0.00071	0.00087

Delay Information

Delay(ns) to Y rising (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xor2_l	A->Y (RR)	!B	0.16046	1.01499	7.45678
	A->Y (FR)	B	0.12609	1.24627	12.87250
	B->Y (RR)	!A	0.13332	0.99944	7.45365
	B->Y (FR)	A	0.13846	1.26024	12.85720

Delay(ns) to Y falling (conditional):

Cell Name	Timing Arc(Dir)	When	Delay(ns)		
			First	Mid	Last
sky130_osu_sc_18T_hs__xor2_l	A->Y (FF)	!B	0.11790	0.70215	5.41313
	A->Y (RF)	B	0.04199	0.54956	5.89794
	B->Y (FF)	!A	0.11171	0.69762	5.41711
	B->Y (RF)	A	0.04997	0.52730	5.54508

Power Information

Internal switching power(pJ) to Y rising (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.01719	0.01662	0.01695
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.00295	0.00138	0.00133
	B	A	0.00000	0.00000	0.00000
	B	A	0.01749	0.01703	0.01686
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.00183	0.00106	0.00118

Internal switching power(pJ) to Y falling (conditional):

Cell Name	Input	When	Power(pJ)		
			first	mid	last
sky130_osu_sc_18T_hs__xor2_l	A	B	0.00000	0.00000	0.00000
	A	B	0.00331	0.00223	0.00213
	A	!B	0.00000	0.00000	0.00000
	A	!B	0.01915	0.01882	0.01939
	B	A	0.00000	0.00000	0.00000
	B	A	0.00333	0.00230	0.00224
	B	!A	0.00000	0.00000	0.00000
	B	!A	0.01728	0.01717	0.01776

SKY130_OSU_SC_18T_HS_x

sky130_osu_sc_18T_hs_ss_1P60_-40C.ccs
Cell Library: Process , Voltage 1.60, Temp -40.00

Truth Table

INPUT
A
x

Footprint

Cell Name	Area
sky130_osu_sc_18T_hs__ant	6.59340
sky130_osu_sc_18T_hs__tiehi	6.59340
sky130_osu_sc_18T_hs__tielo	6.59340

Pin Capacitance Information

Cell Name	Pin Cap(pf)
	A
sky130_osu_sc_18T_hs__ant	0.29346
sky130_osu_sc_18T_hs__tiehi	0.00000
sky130_osu_sc_18T_hs__tielo	0.00000

Leakage Information

Cell Name	Leakage(nW)		
	Min.	Avg	Max.
sky130_osu_sc_18T_hs__ant	0.00000	154777.00000	309554.00000
sky130_osu_sc_18T_hs__tiehi	0.00000	0.00000	0.00000
sky130_osu_sc_18T_hs__tielo	0.00000	0.00000	0.00000

Passive Power Information

Passive power(pJ) for A rising :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__ant	0.00000	0.00000	0.00000
	-0.00349	0.02631	0.38398

Passive power(pJ) for A falling :

Cell Name	Power(pJ)		
	first	mid	last
sky130_osu_sc_18T_hs__ant	0.00000	0.00000	0.00000
	2.69506	2.54024	0.50671